

REMARKS

Claims 18 to 23 are currently pending in this application. Claim 18 has been amended to correct a typographical error identified by the Examiner

In the Office Action, the Examiner has rejected all of claims 18-23 currently pending in this application under 35 USC 103(a) as being obvious in view of the cited references. The Examiner has not repeated the rejections raised in the previous Office Action.

Claims 18 and 22 are independent. Claim 18 is directed to a formed structural member for a vehicle frame and claim 22 is directed to a method of making or forming such structural member. The structural member recited in claims 18 and 22 comprises a body and a “first end”. The first end is designed, or adapted to absorb the force of an impact by deforming in response to such force. To assist in such deformation, the first end is provided with a “deformation initiation site”, which comprises a cross-sectionally tapered portion having a reduced wall thickness as compared to the body portion. Claim 22 provides a unique method that is used to form the structure of the member claimed in claim 18. As discussed in the application, the claimed structure of the member allows for an efficient means of absorbing axially applied forces, such as would be incurred in the event of a vehicular collision (such as in situations where the structural member comprises a vehicle side rail). It should also be noted that the entire structural member is indicated as being unitary and formed as such. As explained in paragraphs [0029], [0030] and [0033], such a structure of the member provides a number of advantages. Firstly, by avoiding the need to join separate sections together, the time required for producing the member is greatly reduced. Further, by avoiding the welding processes used in joining separate sections, the physical characteristics of the finished member remain unaffected thereby allowing accurate prediction of how the member, or, more specifically, the first end thereof, will behave in the event of an axial force being applied. Clearly, such predictability is very important in designing vehicle frame members and in ensuring that the required safety factors (i.e. impact energy absorption) are reproducible.

Claims 18-21, which are directed to formed metal structural members, have been found obvious over Eggert (US 3,912,295) in view of Gertz (US 5,732,801). The Examiner states that Eggert teaches all the elements recited in independent claim 18 and refers to the “body 34” taught in Eggert as being equivalent to the “body” of present claim 18. The Examiner also states that element “34a” of Eggert is equivalent to the “first end” of claim 18. The Examiner further states that element “34a” of Eggert comprises the tapered portion, or “deformation initiation site”, as recited in claim 18.

The Examiner concedes, however, that Eggert fails to teach that the “weakened section” of the first end of the member, has a thinner wall than the body portion. The Examiner suggests, however, that such feature is taught in figure 11 of Gertz.

Gertz teaches a tubular member formed of many sections and parts. This is clearly seen in figure 2 thereof and the related description. Moreover, it is specifically taught in Gertz that:

“The present invention comprises a tubular structure which is stamped with an indented geometric pattern on its surface to initiate and control the crush collapse of the tube” (col. 2, lines 43-45; emphasis added).

Thus, Gertz specifically teaches that to achieve the desired force absorption, the tubular members must comprise a specific “stamped and indented” structure for initiating crushing and thereby absorbing the applied force. This is an essential limitation in Gertz and it is noted that no other feature is provided for achieving this stated purpose.

Gertz does, however, teach a “3 stage” device in figure 11 wherein three distinct sections are provided, each having a different wall thickness. Although each of these sections exhibit different crush characteristics, it is clear from this reference that the initiation of force absorption is still only offered by the specific stamped and indented tubular structure.

It is further very clearly stated in Gertz that the entire member taught therein is formed of multiple sections that are joined together (see for example col. 5, lines 4-9). Thus, Gertz clearly teaches away from any unitary structure as in the present invention.

The Examiner concludes that the different wall thickness sections shown in figure 11 of Gertz can be substituted for the first end 34a of Eggert to result in the invention claimed in claim 18. However, as discussed further below, it is submitted that such a combination is first not possible and even if such combination were possible, it would still not result in the presently claimed invention.

In this regard, it is to be noted that Eggert provides very specific guidance on the structure of the body 34 and the end 34a provided thereon. Specifically, Eggert teaches that the end 34a of the body 34 comprises a “buckling-predisposed portion” (col. 4, lines 46-48). The structural and physical limitations of such portion are discussed in col. 3, lines 46-53:

“The buckling-predisposed or triggering-predisposed formation here shown is provided when the tube is formed and does not involve any prestressing, pre-buckling, or pre-shortening or other deformation or weakening of the tube, that being left whole and entire and able to take axial or oblique loadings at a higher range than if it had been partially pre-buckled throughout all or part of its length.” (emphasis added)

Thus, as specifically taught in the above excerpt from Eggert, the “buckling-predisposed portion 34a” must not be “weakened”. This is a clear limitation imposed by Eggert. In other words, Eggert teaches away from weakening the portion 34a.

As mentioned in the previous response, section 2142 of the MPEP clearly states that, when making a rejection of obviousness, the elements of the prior art must be combined without any change in their respective functions. Clearly, importing the weakened portion of Gertz to as a substitute for the portion 34a of Eggert would require a change in function that is specifically prohibited by Eggert.

In addition, Gertz makes it abundantly clear that the force absorbing sections taught therein must be made of various pieces or sections. Even if the combination of Gertz and Eggert were possible as the Examiner suggests, the resulting member would involve various sections that are joined together and, therefore, would not comprise a “unitary structure” as recited in claim 18 and as defined in the text of the present application. Similarly, Eggert also teaches that the portion 34a must be “left whole and entire” thereby teaching away from assembling such portion from multiple parts.

Finally, it must be clarified that the portion 34a of Eggert is a “buckling-predisposed” region or, using the terminology of the present application, a “deformation initiation site”. The Examiner suggests that a person of ordinary skill in the art would substitute the multiple wall thickness portion of Gertz for the portion 34a. However, such a substitution would be contrary to the clear teaching of Gertz. That is, as discussed above, Gertz specifically teaches in column 2, lines 43-45 that the deformation initiation of the member taught in the reference is achieved by the “stamped and indented geometric pattern on its surface”. There is no teaching or suggestion

in Gertz that the multiple wall thickness sections offers such initiation. The only teaching Gertz provides regarding such portion is that it serves to provide different stages of resistance. Thus, a person of ordinary skill in the art looking to Gertz for a substitute to the “buckling-predisposed” region 34a of Eggert would only be led to include in Eggert the “patterned and indented geometric pattern” of Gertz and not the different stages as the Examiner suggests.

For the above reasons, it is submitted that claim 18 stands non-obvious over the combination of Eggert in view of Gertz.

Claims 19 to 21 depend from claim 18 and are submitted to be novel and non-obvious for at least the reasons mentioned above. Furthermore, it is noted that claims 20 and 21 are directed to a specific structural member such as a side rail. However, it is noted that the tubular member 34 taught in Eggert is only one of many components of a side rail. Clearly, the member 34 taught in Eggert cannot in any way be considered a side rail in and of itself.

Claims 22 and 23 are directed to methods for making the aforementioned tubular members of the invention. The Examiner states that the tubular members taught by Eggert, as modified by Gertz, “would be capable of being formed by the method” as claimed in claim 18. The nature of this rejection is unclear. That is, the Examiner is rejecting the claimed method by stating that the hypothetical tubular member made by combining the teachings of Eggert and Gertz, could be made by the claimed method. However, the Examiner has not advanced any argument to suggest that the claimed method steps are taught in the cited references. Nevertheless, as discussed above, Eggert specifically teaches away from forming any weakened section in the tube, which is a recited element in claims 22 and 23.

The Examiner then states that the method of Withers can be used to form the modified tube of Eggert. However, as stated in the previous response, the method taught by Withers necessarily requires that the opening of the formed tube be wider than the remainder of the body. That is, as stated previously, Withers is specifically directed to forming a tube with a counterbore, which acts to support a further element that is inserted through the opening. This is therefore an essential limitation of Withers, which cannot be detracted from by including a step of narrowing the tube opening. As discussed above, the guidelines for establishing a finding of obviousness requires that the elements of the prior art must be combined without any change in their respective functions (s. 2142 MPEP). Where the invention comprises a method, such elements would comprise the steps of the method. Thus, the method of Withers cannot result in

a tapered section (having a narrower opening than the rest of the body), which is an element required both by Eggert and by the present invention.

On the basis of the foregoing, it is respectfully submitted that all claims now pending in the present application are allowable over the references cited by the Examiner.

Respectfully submitted,

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